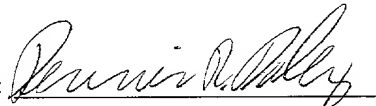


FORM PTO-1390 (REV 10-94)		U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 13470.1605USWO
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U S APPLICATION NO (If known, see 37 C.F.R. 1.5) unknown <b>09/980977</b>
INTERNATIONAL APPLICATION NO. PCT/EP00/03948	INTERNATIONAL FILING DATE 3 May 2000	PRIORITY DATE CLAIMED 12 May 1999	
TITLE OF INVENTION METHOD AND FACILITY FOR LUBRICATING AND CLEANING FILLING FACILITIES FOR BEVERAGES OR FOODSTUFFS			
APPLICANT(S) FOR DO/EO/US SCHMITZ et al.			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(I).</li> <li>4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US)</li> </ol> </li> <li>6. <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 34 <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input checked="" type="checkbox"/> A translation of the amendments to the claims under PCT Article 34</li> <li>9. <input checked="" type="checkbox"/> An unsigned oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).</li> <li>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>			
<b>Items 11. to 16. below concern document(s) or information included:</b>			
11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.			
12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.			
13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.			
14. <input type="checkbox"/> A substitute specification.			
15. <input type="checkbox"/> A change of power of attorney and/or address letter.			
16. <input checked="" type="checkbox"/> Other items or information: International Publication Page, Form 1449, 14 references, Form PCT/ISA/210, Preliminary Amendment, Abstract, Marked-up Copy, Form PCT/IB/308			

U.S. APPLICATION NO (If known, see 37 C.F.R. 1.5) unknown <b>09/980977</b>		INTERNATIONAL APPLICATION NO PCT/EP00/03948		ATTORNEY'S DOCKET NUMBER 13470.1605USWO	
17. <input checked="" type="checkbox"/> The following fees are submitted:  <b>BASIC NATIONAL FEE (37 CFR 1.492(a) (1)-(5)):</b> Search Report has been prepared by the EPO or JPO.....\$890.00  International preliminary examination fee paid to USPTO (37 CFR 1.492(a)(1)).....\$710.00  No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)).....\$740.00  Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(3)) paid to USPTO ..... \$1040.00  International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4).....\$100.00				<b>CALCULATIONS     PTO USE ONLY</b>	
<b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>\$890.00</b>	
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				<b>\$</b>	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	10                      -20 = 0		X <b>\$18.00</b>	<b>\$0.00</b>	
Independent claims	1                         -3 = 0		X <b>\$84.00</b>	<b>\$0.00</b>	
<input checked="" type="checkbox"/> MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ <b>\$260.00</b>	<b>\$</b>	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$890.00</b>	
Reduction by 1/2 for filing by small entity, if applicable. Small entity status is claimed pursuant to 37 CFR 1.27				<b>\$</b>	
<b>SUBTOTAL =</b>				<b>\$890.00</b>	
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+ <b>\$</b>	
<b>TOTAL NATIONAL FEE =</b>				<b>\$890.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+ <b>\$</b>	
<b>TOTAL FEES ENCLOSED =</b>				<b>\$890.00</b>	
				<b>Amount to be:</b>	
				<b>refunded</b>	<b>\$</b>
				<b>charged</b>	<b>\$</b>
a. <input checked="" type="checkbox"/> Check(s) in the amount of <u>\$890.00</u> to cover the above fees is enclosed.  b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.  c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>13-2725</u> .					
<b>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.</b>					
SEND ALL CORRESPONDENCE TO Dennis R. Daley MERCHANT & GOULD P.O. Box 2903 Minneapolis, MN 55402-0903					
				SIGNATURE:   NAME: Dennis R. Daley  REGISTRATION NUMBER: 34,994	

S/N unknown

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: SCHMITZ et al. Serial No.: unknown  
Filed: concurrent herewith Docket No.: 13470.1605USWO  
Title: METHOD AND FACILITY FOR LUBRICATING AND CLEANING  
FILLING FACILITIES FOR BEVERAGES AND FOODSTUFFS

CERTIFICATE UNDER 37 CFR 1.10

'Express Mail' mailing label number: EL658338371US

Date of Deposit: 8 November 2001

I hereby certify that this correspondence is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

By: 

Name: Chris Stordahl

PRELIMINARY AMENDMENT

Box PCT  
Assistant Commissioner for Patents  
Washington, D. C. 20231

Dear Sir:

In connection with the above-identified application filed herewith, please enter the following preliminary amendment, which is, based on claims amended in prosecution of the international application and published in the International Preliminary Examination Report, a copy of which will follow.

Please find enclosed amended sheets 19-24, with amended patent claims 1-10, which were amended according to Article 34, Rule 66, during the preliminary examination procedure on 9 April 2001. The English translation of amended claims 1-10 is also enclosed.

IN THE ABSTRACT

Insert the attached Abstract page into the application as the last page thereof.

### IN THE SPECIFICATION

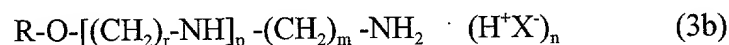
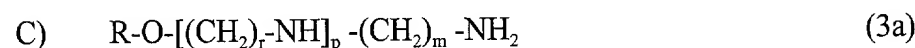
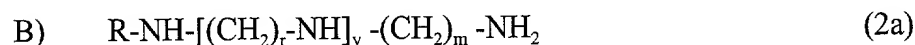
A courtesy copy of the present specification is enclosed herewith. However, the World Intellectual Property Office (WIPO) copy should be relied upon if it is already in the U.S. Patent Office.

### IN THE CLAIMS

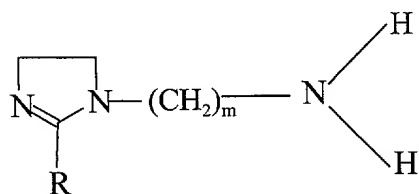
Please amend claims 3, 5-7, and 9-10 as follows:

3. (Amended) A process as claimed in claim 1, characterized in that the product concentrate contains 0.5 to 99.5% by weight of one or more lubricating components selected from ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof and 0.5 to 90% by weight of one or more clear solubility improvers selected from amphoteric surfactants and ether carboxylic acids, the balance to 100% by weight consisting of water and/or other active substances or auxiliaries.

5. (Amended) A process as claimed in claim 1, characterized in that the ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof are selected from compounds belonging to the following groups:



E)



(5)

in which the substituents R represent

a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 6 to 22 carbon atoms,

the substituents Y independently of one another represent hydrogen or a methyl group,

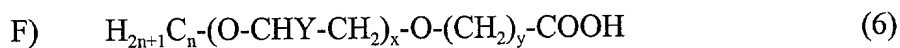
$\text{X}^-$  is an equivalent of an anion from the group consisting of amidosulfonate, nitrate, halide, sulfate, hydrogen carbonate, carbonate, phosphate or carboxylate,

m, r and y independently of one another are integers of 1 to 6,

p is 0 or an integer of 1 to 6 and

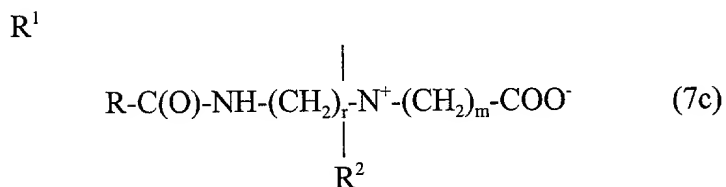
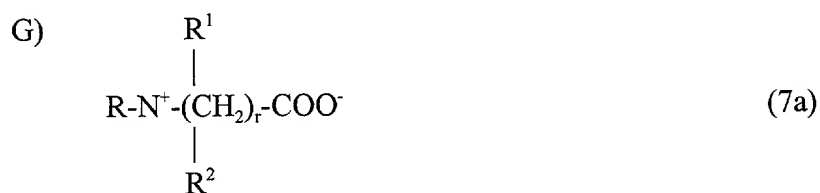
n in B) is an integer of 1 to 2+y and, in C), an integer of 1 to 1+p.

6. (Amended) A process as claimed in claim 1, characterized in that the clear solubility improvers are selected from ether carboxylic acids corresponding to the following general formula:



where Y is hydrogen or a methyl group, n is a number of 10 to 20, x is a number of 1 to 20 and y is a number of 1 to 5,

and from amphoteric surfactants corresponding to the following general formulae:



where the substituents R represent

a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 8 to 22 carbon atoms,

Z has the same meaning as R<sup>1</sup> or is a group with the formula  $-(CH_2)_m-COOH$ ,

R<sup>1</sup> and R<sup>2</sup> independently of one another represent hydrogen, methyl, ethyl, hydroxyethyl or alkoxyate groups and r and m independently of one another are integers of 1 to 6.

7. (Amended) A process as claimed in claim 1 using an installation comprising
- a) one or more nozzles for spraying the surface of the conveyor with an aqueous solution,
  - b) one or more dosing stations provided with i) at least a first dosing pump in at least one dosing station for diluting the aqueous solution mentioned to conveyor lubricant concentration, ii) at least a second dosing pump in at least one dosing station for diluting the aqueous solution mentioned to cleaning and/or disinfecting concentration or with at least one dosing pump of which the dosing ratio can be switched to dilute the aqueous solution mentioned to conveyor lubricant concentration and to cleaning and/or disinfecting concentration,
  - c) a pipe system for carrying the aqueous solution mentioned from the dosing stations to the nozzles.

9. (Amended) A process as claimed in claim 7, characterized in that the installation also comprises an adjustable time switch which alternately switches the first or the second dosing pump on and off after pre-selected time intervals or, in the case of a dosing pump with a reversible dosing ratio, controls adjustment of the conveyor lubricant concentration or the cleaning and/or disinfecting concentration.

10. (Amended) A process as claimed in claim 7, characterized in that the installation comprises other nozzles by which the underneath of the conveyors and/or guide boxes of the conveyors can be sprayed with the aqueous solution.

REMARKS

The above preliminary amendment is made to remove multiple dependencies from claims 3, 5-7, and 9-10.

A new abstract page is supplied to conform to that appearing on the publication page of the WIPO application, but the new Abstract is typed on a separate page as required by U.S. practice.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Marked-up Copy".

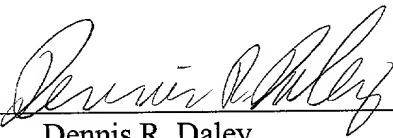
Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Dennis R. Daley (Reg. No. 34,994), at (612) 336.4689.

Respectfully submitted,

MERCHANT & GOULD P.C.  
P.O. Box 2903  
Minneapolis, Minnesota 55402-0903  
(612) 332-5300

Dated: 8 November 2001

By   
Dennis R. Daley  
Reg. No. 34,994

DRD:hjh



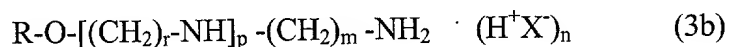
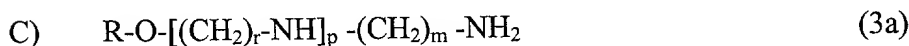
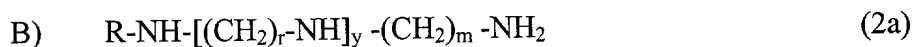
**ABSTRACT**

The invention relates to a method for lubricating and cleaning and/or disinfecting filling facilities for containers receiving beverages or foodstuffs, wherein the containers are conveyed on transport devices which are brought into contact with an aqueous solution of a conveyor lubricant during operation for the purpose of lubrication, wherein said aqueous solution is produced by diluting a product concentrate with water at a first dilution factor. The transport devices and/or the devices connected thereto are cleaned and/or disinfected during preselected time intervals and without interrupting the filling and transport operation by using the product concentrate for cleaning and/or disinfecting the transport devices and/or the devices connected thereto once said product concentrate has been diluted with water at a second dilution factor that is smaller than the first dilution factor.

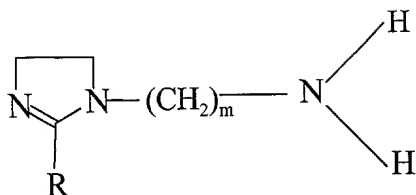
## MARKED-UP COPY

3. A process as claimed in [one or both of claims 1 and 2,] claim 1, characterized in that the product concentrate contains 0.5 to 99.5% by weight of one or more lubricating components selected from ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof and 0.5 to 90% by weight of one or more clear solubility improvers selected from amphoteric surfactants and ether carboxylic acids, the balance to 100% by weight consisting of water and/or other active substances or auxiliaries.

5. A process as claimed in [one or more of claims 1 to 4,] claim 1, characterized in that the ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof are selected from compounds belonging to the following groups:



E)



(5)

in which the substituents R represent

a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 6 to 22 carbon atoms,

the substituents Y independently of one another represent hydrogen or a methyl group,

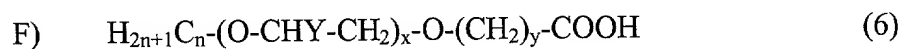
X<sup>-</sup> is an equivalent of an anion from the group consisting of amidosulfonate, nitrate, halide, sulfate, hydrogen carbonate, carbonate, phosphate or carboxylate,

m, r and y independently of one another are integers of 1 to 6,

p is 0 or an integer of 1 to 6 and

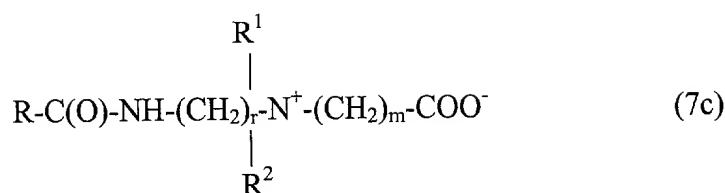
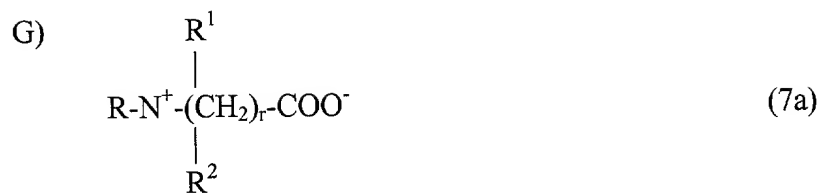
n in B) is an integer of 1 to 2+y and, in C), an integer of 1 to 1+p.

6. A process as claimed in [one or more of claims 1 to 5,] claim 1, characterized in that the clear solubility improvers are selected from ether carboxylic acids corresponding to the following general formula:



where Y is hydrogen or a methyl group, n is a number of 10 to 20, x is a number of 1 to 20 and y is a number of 1 to 5,

and from amphoteric surfactants corresponding to the following general formulae:



where the substituents R represent

a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 8 to 22 carbon atoms,

Z has the same meaning as R<sup>1</sup> or is a group with the formula -(CH<sub>2</sub>)<sub>m</sub>-COOH,

R<sup>1</sup> and R<sup>2</sup> independently of one another represent hydrogen, methyl, ethyl, hydroxyethyl or alkoxylate groups and

r and m independently of one another are integers of 1 to 6.

7. A process as claimed in [one or more of claims 1 to 6] claim 1 using an installation comprising

- a) one or more nozzles for spraying the surface of the conveyor with an aqueous solution,
- b) one or more dosing stations provided with i) at least a first dosing pump in at least

one dosing station for diluting the aqueous solution mentioned to conveyor lubricant concentration, ii) at least a second dosing pump in at least one dosing station for diluting the aqueous solution mentioned to cleaning and/or disinfecting concentration or with at least one dosing pump of which the dosing ratio can be switched to dilute the aqueous solution mentioned to conveyor lubricant concentration and to cleaning and/or disinfecting concentration,

- c) a pipe system for carrying the aqueous solution mentioned from the dosing stations to the nozzles.

9. A process as claimed in claim 7 [or 8], characterized in that the installation also comprises an adjustable time switch which alternately switches the first or the second dosing pump on and off after pre-selected time intervals or, in the case of a dosing pump with a reversible dosing ratio, controls adjustment of the conveyor lubricant concentration or the cleaning and/or disinfecting concentration.

10. A process as claimed in [one or more of claims 7 to 9,] claim 7, characterized in that the installation comprises other nozzles by which the underneath of the conveyors and/or guide boxes of the conveyors can be sprayed with the aqueous solution.

Method and Facility for Lubricating and Cleaning Filling Facilities for  
Beverages or Foodstuffs

This invention relates to a process and an installation for lubricating and for cleaning and/or disinfecting filling lines for containers for holding beverages or foods, the cleaning and/or disinfection cycle taking place during the actual filling and conveying of the particular containers.

- 5 Accordingly, production no longer has to be interrupted after just a few hours for the purpose of cleaning and/or disinfecting the filling line. The invention may be used in particular for automatic chain and belt lubricating systems of the type used in the packaging of foods, preferably beverages, in glass and plastic bottles, cans, glasses, casks, kegs, paper and
- 10 paperboard containers and the like.

- In bottle cellars and cask cellars of beverage factories and in the packaging of foods, conveyor belts or other conveyor installations lubricated with suitable water-based lubricant preparations via automatic belt lubrication systems are normally used for transporting the
- 15 corresponding containers.

- At present, conveyor lubricants based on fatty amines are mainly used for this purpose. Thus, **DE-A-36 31 953** describes a process for lubricating chain-type bottle conveyors in bottling factories, more particularly in breweries, which is characterized in that the chain-type bottle
- 20 conveyors are lubricated with conveyor lubricants based on neutralized primary fatty amines which preferably contain 12 to 18 carbon atoms and which have an unsaturated component of more than 10%.

**EP-A-0 372 628** discloses fatty amine derivatives corresponding to the following formulae:



in which

$R^1$  is a saturated or unsaturated, branched or linear alkyl group containing 8 to 22 carbon atoms,

$R^2$  is hydrogen, an alkyl or hydroxyalkyl group containing 1 to 4 carbon atoms or  $-A-NH_2$ ,

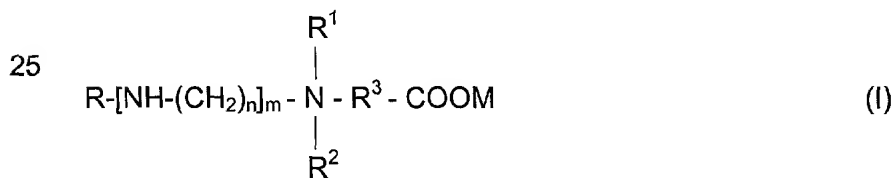
$A$  is a linear or branched alkylene group containing 1 to 8 carbon atoms and

$A^1$  is a linear or branched alkylene group containing 2 to 4 carbon atoms,

as lubricants.

In addition, lubricants based on N-alkylated fatty amine derivatives which contain at least one secondary and/or tertiary amine are known from **DE-A-39 05 548**.

**DE-A-42 06 506** relates to lubricants based on amphoteric compounds, primary, secondary and/or tertiary amines and/or salts of such amines corresponding to general formulae (I), (IIa), (IIb), (IIIa), (IIIb), (IIIc), (IVa) and (IVb):





in which

- 10  $R$  is a saturated or mono- or polyunsaturated, linear or branched alkyl group containing 6 to 22 carbon atoms which may optionally be substituted by  $-OH$ ,  $-NH_2$ ,  $-NH-$ ,  $-CO-$ ,  $-(CH_2CH_2O)_i$  or  $-(CH_2CH_2CH_2O)_i$ ,  
 $R^1$  is hydrogen, an alkyl group containing 1 to 4 carbon atoms, a hydroxyalkyl group containing 1 to 4 carbon atoms or a group  $-R^3COOM$ ,  
 15  $R^2$  is hydrogen, an alkyl group containing 1 to 4 carbon atoms or a hydroxyalkyl group containing 1 to 4 carbon atoms, but only where  $M$  represents a negative charge,  
 $R^3$  is a saturated or mono- or polyunsaturated, linear or branched alkyl group containing 1 to 12 carbon atoms which may optionally be substituted by  $-OH$ ,  $-NH_2$ ,  $-NH-$ ,  $-CO-$ ,  $-(CH_2CH_2O)_i$  or  $-(CH_2CH_2CH_2O)_i$ ,  
 20  $R^4$  is a substituted or unsubstituted, linear or branched, saturated or mono- or polyunsaturated alkyl group containing 6 to 22 carbon atoms which may contain at least one amine, imine, hydroxy, halogen and/or carboxy group as substituent, a substituted or unsubstituted phenyl group which  
 25 may contain at least one amine, imine, hydroxy, halogen, carboxy and/or a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 6 to 22 carbon atoms as substituent,  
 $R^5$  is hydrogen or - independently of  $R^4$  - has the same meaning as  $R^4$ ,  
 $X^-$  is an anion from the group consisting of amidosulfonate, nitrate, halide,  
 30 sulfate, hydrogen carbonate, carbonate, phosphate or  $R^6-COO^-$  where  
 $R^6$  is hydrogen, a substituted or unsubstituted, linear or branched alkyl group containing 1 to 20 carbon atoms or alkenyl group containing 2 to



20 carbon atoms, which may contain at least one hydroxy, amine or imine group as substituent, or a substituted or unsubstituted phenyl group which may contain an alkyl group with 1 to 20 carbon atoms as substituent, and

- 5  $R^7$  and  $R^8$  independently of one another represent a substituted or unsubstituted, linear or branched alkyl group containing 1 to 20 carbon atoms or alkenyl group containing 2 to 20 carbon atoms which may contain at least one hydroxy, amine or imine group as substituent, or a substituted or unsubstituted phenyl group which may contain an alkyl group with 1  
10 to 20 carbon atoms as substituent,

M is hydrogen, alkali metal, ammonium, an alkyl group containing 1 to 4 carbon atoms, a benzyl group or a negative charge,

n is an integer of 1 to 12,

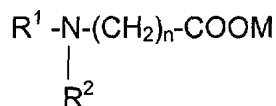
m is an integer of 0 to 5 and

- 15 l is a number of 0 to 5,  
containing alkyl dimethylamine oxides and/or alkyl oligoglycosides as nonionic surfactants.

**EP-B-629 234** discloses a lubricant combination consisting of

- a) one or more compounds corresponding to the following formula:

20



25 in which

$R^1$  is a saturated or mono- or polyunsaturated, linear or branched alkyl group containing 6 to 22 carbon atoms which may optionally be substituted by -OH, -NH<sub>2</sub>-, -NH-, -CO-, halogen or a carboxyl group,

$R^2$  is a carboxyl group containing 2 to 7 carbon atoms,

- 30 M is hydrogen, alkali metal, ammonium, an alkyl group containing 1 to 4 carbon atoms or a benzyl group and

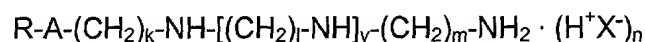
n is an integer of 1 to 6,

b) at least one organic carboxylic acid selected from monobasic or polybasic, saturated or mono- or polyunsaturated carboxylic acids containing 2 to 22 carbon atoms,

5 c) optionally water and additives and/or auxiliaries.

**WO 94/03562** describes a lubricant concentrate based on fatty amines and optionally typical diluents or auxiliaries and additives, characterized in that it contains at least one polyamine derivative of a fatty amine and/or a salt of such an amine, the percentage content of the polyamine derivatives of fatty amines in the formulation as a whole being from 1 to 100% by weight.

In one preferred embodiment of WO 94/03562, this lubricant concentrate contains at least one polyamine derivative of a fatty amine corresponding to the following general formula:



in which

R is a substituted or unsubstituted, linear or branched, saturated or mono- or polyunsaturated alkyl group containing 6 to 22 carbon atoms, the substituents being selected from amino, imino, hydroxy, halogen and carboxy, or a substituted or unsubstituted phenyl group, the substituents being selected from amino, imino, hydroxy, halogen, carboxy and a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 6 to 22 carbon atoms,

A represents either -NH- or -O-,

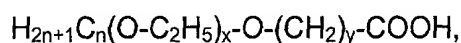
X<sup>-</sup> is an anion of an inorganic or organic acid,

k, l and m independently of one another are integers of 1 to 6,

y is 0, 1, 2 or 3 where A = -NH- or 1, 2, 3 or 4 where A = -O- and

30 n is an integer of 0 to 6.

**DE-C-42 44 536** relates to a water-based lubricant for bottle conveyor belts containing at least one alkyldiamine corresponding to the general formula  $H_{2n+1}C_n-NH-(CH_2)_x-NHR$ , where n is a number of 8 to 20 and x is a number of 1 to 5 and R is a hydrogen atom or an alkyl group containing 1 to 20 carbon atoms, the salt of the alkyldiamine and an organic acid and optionally an organic acid and at least one ether carboxylic acid corresponding to the following general formula:



10

where n is a number of 10 to 20, x is a number of 1 to 20 and y is a number of 0 to 5.

**DE-A-36 31 953** describes a process for lubricating chain-form bottle conveyor belts in bottling factories and for cleaning the belts with a liquid cleaning preparation, the chain-form bottle conveyor belts being lubricated with conveyor lubricants based on neutralized primary fatty amines and cleaned with cationic cleaning preparations or organic acids. Accordingly, the document in question describes a process which uses a combination of a conveyor lubricant and an adapted cleaning preparation. However, this means that the bottling and conveying process has to be interrupted for the cleaning step.

A product information pamphlet from Diversey GmbH on the conveyor lubricant Dicolube® RS 148 states that conveyor installations have to be thoroughly cleaned if a switch is to be made from other chain lubricants to this product. It is disclosed that the product Dicolube® RS 148 is a suitable cleaner in the form of 5 to 10% solutions. This concentration is well above the concentration used for belt lubrication. However, the pamphlet in question does not indicate that the concentration of the lubricant can be increased for cleaning purposes without interrupting production, i.e. while conveying and bottling are in progress.

By contrast, the problem addressed by the present invention was to provide a process and an installation for lubricating and for cleaning and/or disinfecting filling lines for containers for holding beverages or foods which would allow continuous bottling and conveying for at least several days.

- 5 This would overcome the existing disadvantage of belt lubrication processes that the conveyor installations have to be stopped after only a few hours' production for the purpose of cleaning and/or disinfection.

In a first embodiment, the present invention relates to a process for lubricating and for cleaning and/or disinfecting filling lines for containers for  
10 holding beverages or foods where the containers are transported on conveyors which - for lubrication - are contacted in operation with an aqueous solution of a conveyor lubricant, characterized in that the aqueous solution is prepared by dilution of a product concentrate with water by a first dilution factor and in that the conveyors and/or facilities connected to them  
15 are cleaned and/or disinfected after preselected time intervals without any break in the container filling and transport process by using the product concentrate to clean and/or disinfect the conveyors and/or facilities connected to them after dilution with water by a second dilution factor which is smaller than the first dilution factor.

- 20 The conveyors may be conventionally constructed and include, for example, conveyor chains, conveyor belts, platform conveyors and the like.

Accordingly, a crucial aspect of the invention is that the same product concentrate may be used to lubricate the belts during normal container filling and transport and to clean and/or disinfect them at regular  
25 intervals by increasing the product concentration without the container filling and transport process having to be interrupted for that purpose. The first dilution factor for diluting the product concentrate to the lubricant concentration on the one hand and the second dilution factor for dilution to the cleaning and/or disinfecting concentration on the other hand are  
30 preferably selected so that the first dilution factor is 5 to 100 times greater

than the second dilution factor. In other words, for dilution to the lubricant concentration, the product concentrate is diluted 5 to 100 times more strongly than for dilution to the cleaning and/or disinfecting concentration. The first dilution factor is preferably between about 100 and 1000 and more particularly between about 300 and 500. The second dilution factor is preferably adjusted to between 10 and 100 and more particularly to between 30 and 50.

The water used to dilute the product concentrate to lubricant concentration normally has the temperature at which it can be taken from a fresh water supply. Water with the same temperature or heated water may be used for the cleaning and/or disinfecting step. In general, the cleaning/disinfecting step may be carried out by diluting the product concentrate with water having a temperature of 5 to 80°C. However, efficiency is improved if water heated for this step is used to dilute the product concentrate by the second dilution factor. Water with a temperature of about 30 to about 60°C is preferably used for this purpose.

The process according to the invention is preferably carried out using a product concentrate containing 0.5 to 99.5% by weight of one or more lubricating components selected from ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof and 0.5 to 90% by weight of one or more so-called clear solubility improvers selected from amphoteric surfactants and ether carboxylic acids, the balance to 100% by weight consisting of water and/or other active substances or auxiliaries.

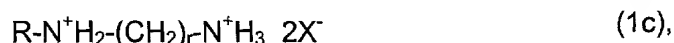
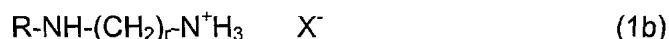
In one particular embodiment, the process according to the invention is carried out using a product concentrate containing 1 to 40% by weight and preferably 3 to 20% by weight of one or more lubricating components selected from ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl

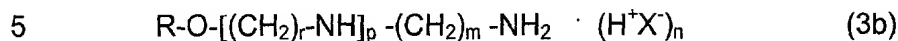
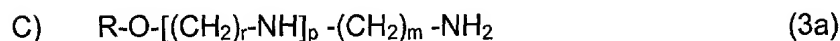
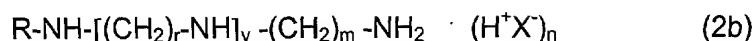
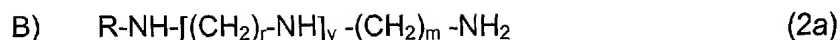
group with 6 to 22 carbon atoms and/or salts thereof and 1 to 50% by weight and preferably 2 to 20% by weight of one or more clear solubility improvers selected from amphoteric surfactants and ether carboxylic acids, the balance to 100% by weight consisting of water and/or other active substances or auxiliaries.

The quantity ratio between lubricating components and clear solubility improvers is preferably in the range from 0.2:1 to 1:0.2 and more particularly in the range from 0.5:1 to 1:0.5. Clear solubility improvers are also known as components of conventional chain lubricants where they provide for better stability of the in-use solution. According to the present invention, the relatively large addition of clear solubility improvers enables the product concentrate to be used on the one hand as a lubricant and on the other hand as a cleaner/disinfectant during bottling.

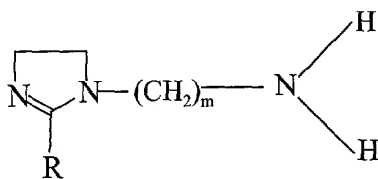
The other active substances or auxiliaries mentioned include in particular nonionic and/or amphoteric surfactants, for example alkoxylated fatty amines, fatty alcohols and alkoxylated fatty alcohols. These surfactants can improve the wetting of the chain and platform conveyors should this ever be necessary. In general, surfactant additions of 0.1 to 15% by weight, based on the product concentrate, are sufficient for this purpose.

The amine compound used as the lubricating component is preferably selected from compounds belonging to the groups of ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof with the following general formulae:





E)



(5)

in which the substituents R represent

a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 6 to 22 carbon atoms,

the substituents Y independently of one another represent hydrogen or a methyl group,

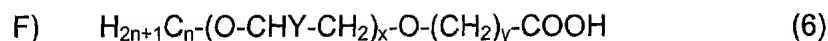
$\text{X}^-$  is an equivalent of an anion from the group consisting of amidosulfonate, nitrate, halide, sulfate, hydrogen carbonate, carbonate, phosphate or carboxylate,

m, r and y independently of one another are integers of 1 to 6,

p is 0 or an integer of 1 to 6 and

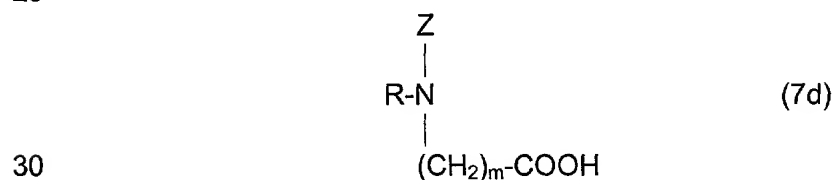
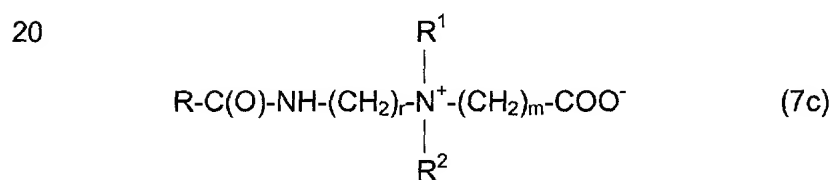
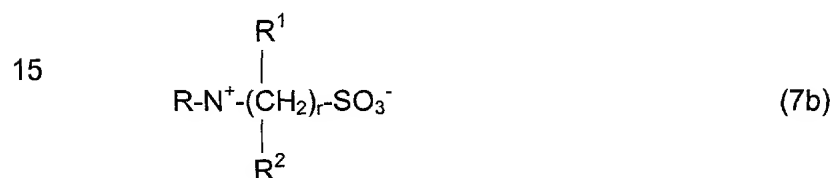
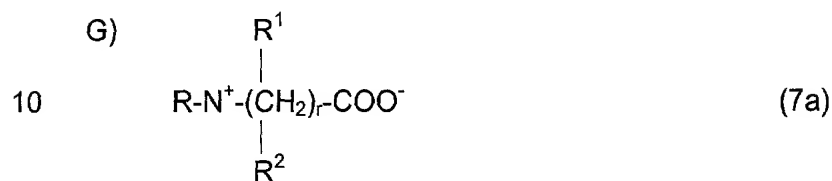
n in B) is an integer of 1 to 2+y and, in C), an integer of 1 to 1+p.

The components used as clear solubility improvers are preferably selected from ether carboxylic acids corresponding to the following general formula:



where Y is hydrogen or a methyl group, n is a number of 10 to 20, x is a number of 1 to 20 and y is a number of 1 to 5,

5 and from amphoteric surfactants corresponding to the following general formulae:



where the substituents R represent

a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 8 to 22 carbon atoms,

35 Z has the same meaning as  $\text{R}^1$  or is a group with the formula  $\text{-(CH}_2\text{)}_m\text{-COOH}$ ,

$\text{R}^1$  and  $\text{R}^2$  independently of one another represent hydrogen, methyl, ethyl,



hydroxyethyl or alkoxylate groups and

r and m independently of one another are integers of 1 to 6.

Both in the lubricating components and in the clear solubility improvers, the substituent R is preferably a linear or branched, saturated or  
5 mono- or polyunsaturated alkyl group containing 12 to 22 carbon atoms. However, alkyl groups containing from 6 carbon atoms may also be used. Suitable substituents R are in particular n-hexyl, n-heptyl, n-octyl, n-nonyl, n-decyl, n-undecyl, n-dodecyl, n-tridecyl, n-tetradecyl, n-pentadecyl, n-hexadecyl, n-heptadecyl, n-octadecyl, n-nonadecyl, n-eicosyl, n-uneicosyl  
10 and n-docosyl and the branched-chain isomers of the alkyl groups mentioned. Instead of the saturated alkyl groups, R may also represent the corresponding mono- or polyunsaturated alkyl groups which may also be linear or branched. The groups mentioned above may also be substituted, in which case suitable substituents are one or more amine, imine,  
15 hydrogen, halogen or carboxy groups. These compounds are all known for use in conveyor lubricants.

If the acid substituent X<sup>-</sup> is a carboxylate ion, it is preferably one of the following carboxylate ions: formate, acetate, oxalate, lactate or an anion of malic acid, tartaric acid or citric acid. Acetate is particularly  
20 preferred.

m, r and y are preferably integers of 1 to 3. In a particularly preferred embodiment, r and m preferably have a value of 3, i.e. propylene groups are preferably present at the corresponding positions.

In a second embodiment, the present invention relates to an  
25 installation for carrying out the process according to the invention. Accordingly, the invention also relates to an installation for cleaning and/or disinfecting and lubricating filling lines for containers for holding beverages or foods where the containers are transported on conveyors, characterized in that it comprises

30

- a) one or more nozzles for spraying the surface of the conveyor with an aqueous solution,
- b) one or more dosing stations provided with i) at least a first dosing pump in at least one dosing station for diluting the aqueous solution mentioned to conveyor lubricant concentration, ii) at least a second dosing pump in at least one dosing station for diluting the aqueous solution mentioned to cleaning and/or disinfecting concentration or with at least one dosing pump of which the dosing ratio can be switched to dilute the aqueous solution mentioned to conveyor lubricant concentration and to cleaning and/or disinfecting concentration,
- c) a pipe system for carrying the aqueous solution mentioned from the dosing stations to the nozzles.

The conveyors can again be of various types and include, for example, conveyor chains, conveyor belts, platform conveyors and the like. Nozzles for spraying the surface of the conveyor with an aqueous solution are normally present because the lubricant solutions are applied in this way. These nozzles may also be used to apply the product concentrate diluted to cleaning and/or disinfecting concentration to the surface of the conveyor.

In an alternative embodiment of the invention, at least a first dosing pump is provided in at least one dosing station for diluting the aqueous solution to conveyor lubricant concentration and at least a second dosing pump is provided in at least one dosing station for diluting the aqueous solution to cleaning and/or disinfecting concentration. Accordingly, this embodiment is characterized by the provision of at least two different dosing pumps of which the dosing ratio can be adjusted in advance. In the process according to the invention, the dosing ratios differ by a factor of 5 to 100. Alternatively, however, one or more dosing pumps of which the

dosing ratio can be switched to dilute the aqueous solution to conveyor lubricant concentration and to cleaning and/or disinfecting concentration may be used in accordance with the invention. Accordingly, this dosing pump dispenses different quantities of the product concentrate according to the dilution setting. The installation additionally comprises a pipe system through which the aqueous solution can be transported from the dosing station to the nozzles.

In a preferred embodiment, the installation according to the invention also contains a water throughflow meter for the fresh water used to prepare the conveyor lubricant solution or the cleaning/disinfecting solution. In this way, the dosing pumps can be adjusted in such a way that they dispense the particular amount of product concentrate required proportionally to the throughflow of water in order to adjust either the conveyor lubricant concentration or the cleaning/disinfecting concentration.

In principle, the switching of the dosing pump or the dosing pumps from conveyor lubricant concentration to cleaning/disinfecting concentration may be carried out by hand at any time. However, the installation according to the invention preferably also comprises an adjustable time switch which alternately switches the first or the second dosing pump on and off after pre-selected time intervals or, in the case of a dosing pump with a reversible dosing ratio, controls adjustment of the conveyor lubricant concentration or the cleaning and/or disinfecting concentration. In this way, the conveyor is able to operate fully automatically. If the installation comprises, for example, separate pumps for adjusting the conveyor lubricant concentration on the one hand and the cleaning/disinfecting concentration on the other hand, the time switch can be adjusted, for example, in such a way that it keeps the first dosing pump in operation for 5 hours and 55 minutes. After this time interval, the first dosing pump is switched off and the second dosing pump is switched on, for example, for a period of 5 minutes. Thereafter the second dosing pump is switched off

again and the first dosing pump is switched back on for 5 hours and 55 minutes. In other words, the conveyor is operated for 5 hours and 55 minutes with the product concentrate adjusted to conveyor lubricant concentration and for 5 minutes with the product concentrate adjusted to  
5 cleaning/disinfecting concentration without the conveyor having to be switched off for this purpose. In this embodiment, therefore, the conveyor is cleaned and disinfected every 6 hours without the container filling and transport process having to be disrupted. If the installation comprises just  
10 one dosing pump of which the dosing ratio can be switched from conveyor lubricant concentration to cleaning/disinfecting concentration, the process takes place in the same way except that the dosing ratio of the pump is adjusted to conveyor lubricant concentration or to cleaning/disinfecting concentration for the particular periods intended.

The installation preferably contains other nozzles by which the  
15 underneath of the conveyor and/or guide boxes of the conveyors can be sprayed with the aqueous solution diluted to cleaning/disinfecting concentration. In this way, the conveyor can be thoroughly cleaned and/or disinfected. The nozzles on the underneath of the conveyors and/or in the guide boxes are only opened during the cleaning/disinfecting phases.

20 All parts of the filling line which come into contact with the product concentrate diluted to cleaning/disinfecting concentration are cleaned and/or disinfected. These include not only the conveyor belt itself, but also the pipe system and the associated nozzles.

Accordingly, the present invention enables conveyors to be operated  
25 continuously, i.e. for at least several days, using a single product concentrate without any need for interruptions for cleaning purposes. Accordingly, the present invention relates quite generally to a method of operating an installation for filling containers for holding beverages or foods where the containers are transported on conveyors which enables the  
30 container filling and transport process to be carried out continuously without

any breaks for cleaning purposes.

Accordingly, the invention affords the following advantages:

1. Conveyor lubrication and cleaning take place with a single  
5 correspondingly diluted product. Accordingly, there is no need for additional storage capacity for a separate cleaner/disinfectant
2. Only a single pipe system for conveyor lubricant and cleaner/disinfectant is required.
3. The conveyor lubrication system itself is included in the cleaning  
10 measures. In this way, contaminated conveyor lubricant solutions are prevented from being applied to the conveyors.
4. Cleaning and/or disinfection take place without disrupting or interrupting production so that no additional time or labor is required.  
There are no startup problems either.

15

Accordingly, the invention leads generally to an increase in production capacity because no extra time is required for cleaning/disinfection and restarting of the line. Production safety is increased because the conveyor lubrication system itself is included in the  
20 cleaning/disinfection process.

WO 00/70002

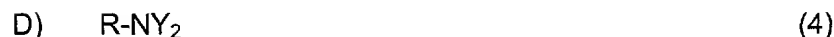
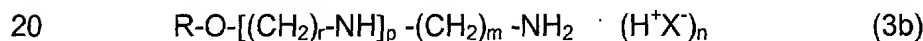
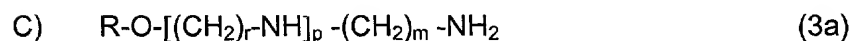
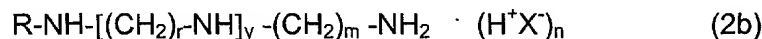
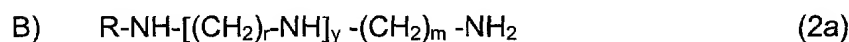
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**Amended Claims**

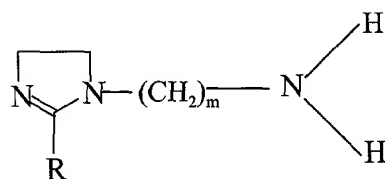
1. A process for lubricating and for cleaning and/or disinfecting filling lines for containers for holding beverages or foods, characterized in that the containers are transported on conveyors which - for lubrication - are  
5 contacted in operation with an aqueous solution of a conveyor lubricant, this aqueous solution being prepared by dilution of a product concentrate with water by a first dilution factor and the conveyors and/or facilities connected to them being cleaned and/or disinfected after preselected time intervals without any break in the container filling and transport process by  
10 using the product concentrate to clean and/or disinfect the conveyors and/or facilities connected to them after dilution with water by a second dilution factor which is 5 to 100 times smaller than the first dilution factor.
2. A process as claimed in claim 1, characterized in that, after dilution with water by a second dilution factor which is 5 to 100 times smaller than  
15 the first dilution factor, the product concentrate is used with a temperature of 5 to 80°C for cleaning and/or disinfecting the conveyors and/or facilities connected to them.
3. A process as claimed in one or both of claims 1 and 2, characterized in that the product concentrate contains 0.5 to 99.5% by weight of one or  
20 more lubricating components selected from ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof and 0.5 to 90% by weight of one or more clear solubility improvers selected from amphoteric surfactants and ether carboxylic acids, the  
25 balance to 100% by weight consisting of water and/or other active substances or auxiliaries.
4. A process as claimed in claim 3, characterized in that the product concentrate contains 1 to 40% by weight and preferably 3 to 20% by weight  
30 of one or more lubricating components selected from ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole

derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof and 1 to 50% by weight and preferably 2 to 20% by weight of one or more clear solubility improvers selected from amphoteric surfactants and ether carboxylic acids, the balance to 100% by weight consisting of water and/or other active substances or auxiliaries.

5. A process as claimed in one or more of claims 1 to 4, characterized in that the ether amines, ether diamines, ether polyamines, mono-, di- or polyamines and imidazole derivatives each containing at least one alkyl group with 6 to 22 carbon atoms and/or salts thereof are selected from compounds belonging to the following groups:



E)



(5)

in which the substituents R represent a linear or branched, saturated or mono- or polyunsaturated alkyl group

containing 6 to 22 carbon atoms,

the substituents Y independently of one another represent hydrogen or a methyl group,

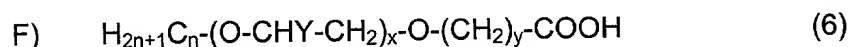
X<sup>-</sup> is an equivalent of an anion from the group consisting of amidosulfonate, nitrate, halide, sulfate, hydrogen carbonate, carbonate, phosphate or carboxylate,

m, r and y independently of one another are integers of 1 to 6,

p is 0 or an integer of 1 to 6 and

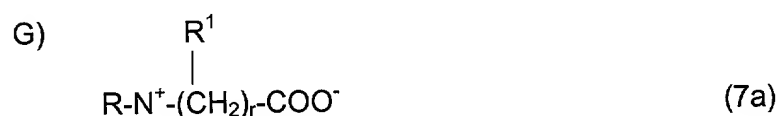
n in B) is an integer of 1 to 2+y and, in C), an integer of 1 to 1+p.

6. A process as claimed in one or more of claims 1 to 5, characterized in that the clear solubility improvers are selected from ether carboxylic acids corresponding to the following general formula:

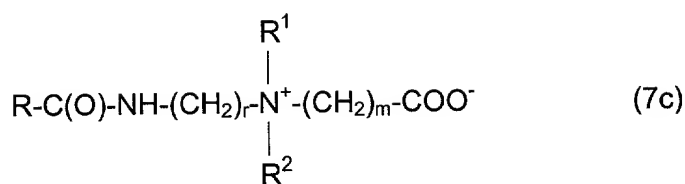


where Y is hydrogen or a methyl group, n is a number of 10 to 20, x is a number of 1 to 20 and y is a number of 1 to 5,

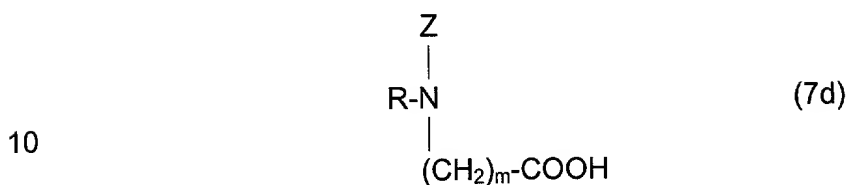
and from amphoteric surfactants corresponding to the following general formulae:







5



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where the substituents R represent

a linear or branched, saturated or mono- or polyunsaturated alkyl group containing 8 to 22 carbon atoms,

15

Z has the same meaning as R<sup>1</sup> or is a group with the formula  $-(\text{CH}_2)_m-\text{COOH}$ ,

R<sup>1</sup> and R<sup>2</sup> independently of one another represent hydrogen, methyl, ethyl, hydroxyethyl or alkoxylate groups and

r and m independently of one another are integers of 1 to 6.

20

7. A process as claimed in one or more of claims 1 to 6 using an installation comprising

a) one or more nozzles for spraying the surface of the conveyor with an aqueous solution,

b) one or more dosing stations provided with i) at least a first dosing pump in at least one dosing station for diluting the aqueous solution mentioned to conveyor lubricant concentration, ii) at least a second dosing pump in at least one dosing station for diluting the aqueous solution mentioned to cleaning and/or disinfecting concentration or with at least one dosing pump of which the dosing ratio can be switched to dilute the aqueous solution mentioned to conveyor lubricant concentration and to cleaning and/or disinfecting concentration,

30

- c) a pipe system for carrying the aqueous solution mentioned from the dosing stations to the nozzles.
8. A process as claimed in claim 7, characterized in that the installation also comprises a water throughflow meter.
- 5 9. A process as claimed in claim 7 or 8, characterized in that the installation also comprises an adjustable time switch which alternately switches the first or the second dosing pump on and off after pre-selected time intervals or, in the case of a dosing pump with a reversible dosing ratio, controls adjustment of the conveyor lubricant concentration or the
- 10 cleaning and/or disinfecting concentration.
10. A process as claimed in one or more of claims 7 to 9, characterized in that the installation comprises other nozzles by which the underneath of the conveyors and/or guide boxes of the conveyors can be sprayed with the aqueous solution.

MERCHANT &amp; GOULD P.C.

## United States Patent Application

## COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD AND FACILITY FOR LUBRICATING AND CLEANING FILLING FACILITIES FOR BEVERAGES OR FOODSTUFFS

The specification of which

- a. ☐ is attached hereto  
b. ☒ was filed on 8 November 2001 as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. PCT/EP00/03948 filed 3 May 2000 and as amended on 9 April 2001 (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a. ☐ no such applications have been filed.  
b. ☒ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
Germany	199 21 709.2	12 May 1999	
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (reprinted below):

**§ 1.56 Duty to disclose information material to patentability.**

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;

or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary. I understand that the execution of this document, and the grant of a power of attorney, does not in itself establish an attorney-client relationship between the undersigned and the law firm Merchant & Gould P.C., or any of its attorneys. Please direct all correspondence in this case to Merchant & Gould P.C. at the address indicated below:

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